ONTARIO
FISH AND WILDLIFE
REVIEW

Special Centennial Issue

Volume Six, Numbers One and Two

Spring–Summer, 1967

ONTARIO

DEPARTMENT OF LANDS AND FORESTS

HON. RENE BRUNELLE, MINISTER

G.H.U. BAYLY, DEPUTY MINISTER

ONTARIO
FISH AND WILDLIFE
REVIEW

Special Centennial Issue

Volume Six, Numbers One and Two — Spring–Summer, 1967

CONTENTS — PAGE

THE COVER

The maple leaf and the trillium, emblems of Canada and Ontario, respectively, are shown in the forms approved by governmental degrees. In the Centennial Symbol, adopted as an emblem of Canada under the Trade Marks Act, ten of the triangles represent the ten provinces; the eleventh, at the apex, stands for the Canadian North.

ONTARIO FISH AND WILDLIFE REVIEW is published four times per year by the Department of Lands and Forests, Parliament Buildings, Toronto 5, Ontario.

Looking Ahead to 2067

The changes that have taken place in our fisheries and wildlife resources in Canada's first hundred years have been mostly destructive. We have lost the passenger pigeon and the salmon, and we have also fouled the Old Fishing Hole and drained the duck slough.

As a substitute, we have used our time and wealth to try to find what we have lost at home farther and farther afield. Now that the uttermost reaches of our province are only a few hours away for those who have time and wealth, maybe we will quit chasing the will-of-the-wisp and lower our eyes to our home grounds.

Whereas the discovery of the first hundred years was how to conquer the wilderness, maybe in the future we shall learn how to restore the paradise that used to be home. One day, we can hope to reach the stage where gains in this direction will be permanent and cumulative. Who knows whose little push may start the whole thing rolling.

HISTORY OF TRAPLINE MANAGEMENT IN ONTARIO

by H.J. Gibbard and Phyllis King
Fur Management Unit

The earliest legislative action directed specifically toward fur management was embodied in "an Act for the better protection of Game in Upper Canada" which was assented to on May 19, 1860. This was the first concrete sign of reaction against the earlier uncontrolled exploitation of the resource and heralded the beginning of a new era --- one of restrictive legislation.

In the Act of 1860, seasons were set for the taking of beaver, muskrat, mink, sable (marten), otter and fisher. The open season was from the first day of November to the last day of April. However, thirty-two years were to pass, before any staff was to be appointed for the enforcement of such laws. It is interesting to note that this first Act of Parliament, dealing with trapping in Upper Canada, was passed, and assented to, without recorded discussion. Either there was a lack of enthusiasm among the parliamentarians or Mr. Thompson, who wrote "Thompson's Mirror of Parliament" (the forerunner of Hansard), did not deem the matter worthy of reporting. This Act was repealed and replaced after Confederation by "An Act for the Better Protection of Game in the Province of Ontario" which was assented to on February 28, 1868. Still no staff to enforce the law!

The search for new supplies of furs strongly influenced the exploration of North America. There was considerable demand for pelts in Europe and, as a result, the fur trade was by far the most important business in North America during the initial period of discovery and settlement. Store goods were valued in terms of "made beavers" and fractions thereof. Other furs were also valued in terms of "made beavers". "Beaver" in other words, was the standard of currency. Later, the Hudson's Bay Company actually minted and issued gold coins bearing the image of the beaver.

The early fur trade in this country brought about shifts in the native Indian population. It became worthwhile for Indians to move into new territory where they could convert what were once regarded as insignificant furs into the necessities of life. They soon exhausted the supply of beaver and other fur-bearers in the territories around the early settlements. Minor wars were often whipped up among the tribes in their drive to take over new territory.

White trappers began to compete with Indians for trapping grounds during the latter part of the nineteenth century. Around the turn of the century, trapping pressure became so severe that several species of fur-bearers decreased rapidly and became scarce over large areas. Generally, white trappers were not satisfied to trap only the annual surplus of furs; instead, they "mined" the fur resources. Consequently, the Indians followed suit.

Load of fur at Chapleau, ready for shipment to Montreal, 1918.

It soon became clear to the government that, since the fur resources were basic to the existence of the northern Indians and Eskimos, it would be necessary to take drastic action to protect the threatened species. Thus began a new phase in the management of fur-bearing animals.

A most progressive step was taken in the late Twenties and early Thirties when, throughout much of Canada, special hunting areas were set aside for Indians in which no trapping by non-Indians was allowed. A movement to conserve beaver was first started in Quebec by Mr. J. Watt, a Hudson's Bay Company post manager at Rupert House on the east coast of James Bay. His activities received the support of both Dominion and provincial governments and of the Hudson's Bay Company. Extensive beaver preserves were established, and the Indians were taught to harvest the beaver on a rational basis and to handle the pelts properly.

The Indian Affairs Branch of the Department of Citizenship and Immigration was largely concerned with the management of fur resources. This stemmed from the dependence of Indians upon these resources. Dominion government aid in fur management began in Manitoba in 1936. At this time, the federal authorities co-operated with the provincial game branch in a number of programs, including the improving of muskrat marshes.

Ontario now has the largest and most intensive fur management program

Buying fur inside Revillion Freres store at Missanabie, 1908.

in Canada. It is based on many new concepts. The basis for management is the registered trapline—a piece of Crown Land upon which the licensed trapper has the exclusive trapping rights. The trapper has become a responsible manager for a specific area in which he has a personal interest.

In addition, the trappers are assisted in the management of their grounds and their fur. They are invited to attend trappers' meetings which are organized by the Department of Lands and Forests. In an informal atmosphere, seasons and censuses are discussed. Trappers are informed of new developments in fur management and of better methods of handling pelts which may increase their value by 20 per cent or more. The registered trapline licence requires the trapper to assume definite responsibilities. He must present an annual return showing the number of all species of furs trapped, maps showing the location of all live beaver houses on this trapline, and his estimates of wolves, moose, etc., in his territory.

The registered trapline system was developed in British Columbia between 1924 and 1932. It was based on the government's recognition of an individual's right to trap in a certain area. Registered traplines are now well established in one form or another in several of the provinces.

First registration of Ontario traplines was in 1935, and, in most places,

surveyed townships were assigned as trapline areas. This facilitated administration but was not an ideal arrangement for the trapper. Trapline boundaries now follow natural physiographic features such as streams, lakes and ridges of hills. This allows the trapper to cover his ground much more easily and results in a more evenly distributed trapping pressure.

Licences for registered traplines are renewable annually provided the trapper meets the regulations and continues to trap. A trapper is encouraged to manage his line soundly, build good cabins and clean his trail system regularly. Under the direction of the Department, he may even sell his line or pass it to a son in the event of his death. Although he is given the privilege of trapping a certain area, he does not "own" it; it is the property of the Crown. He may sell equipment, cabins, etc., but the trapping rights remain those of the Crown. Traplines in agricultural, southern Ontario are also organized now, and each trapper makes an agreement with farmers on whose land he wishes to trap.

A major objective of fur management is a controlled harvest, improvement of the habitat, and the improvement of the quality of the wild fur crop. Restricting the trapping season was the most obvious approach to control and, therefore, was the first method to be applied. Quotas were also introduced to regulate the take of certain species and to ensure the annual crop of fur was harvested.

The setting of seasons (so that pelts are taken in prime condition) is important. Research has shown the period when the pelts of the various fur-bearers are in prime condition. Generally, seasons are now adjusted accordingly. Some trappers, who have an understanding of the biological basis for open seasons, set their own season well within those set by regulation to obtain pelts in the peak of primeness. The handling of pelts has improved greatly, under the direction of Department officers. Trappers now know that properly degreased, well stretched, correctly dried pelts bring a premium price. Better scraping knives, stretchers and other implements for handling furs are now readily available.

Special live-trapping and transplanting techniques have been successfully used by the Department. When areas are depleted by disease or other factors, they can be successfully restocked.

The residents of Ontario are the shareholders in the trapping industry and receive a share of the profits through revenues from royalties on pelts.

In 1959, the Ontario Trappers' Association Fur Sales Service was established in North Bay as a marketing service for trappers where their fur could be sold on a competitive market within the Province. Before the establishment of the auction sales, the Ontario trapper had to sell his fur on a local, unorganized market or ship his relatively small consignments to Montreal, Winnipeg or the United States. Now, buyers from Montreal, New York and the western provinces compete for the large lots of graded fur at the North Bay fur sales.

This has been a great boon to Ontario trappers who produce more than one-third of all wild fur taken in Canada.

A CENTURY OF COMMERCIAL FISHERY ADMINISTRATION IN ONTARIO

by N. Robert Payne
Biologist, Commercial Fish Unit

Commercial fisheries are administered by governments and their service organizations to ensure proper protection, development and use of the fisheries resource. The complete history of such administration in Ontario encompasses a period exceeding by at least six decades the one hundred years covered in this account. However, virtually all of the decisions and developments of real consequence in this field may be found in the events of the last century.

At Confederation, the administration of commerical fisheries in Ontario, which for many years had been a secondary responsibility of the Commissioner of Crown Lands for Upper Canada, entered into an entirely new era. By virtue of the British North America Act, the document assigning to Canada her constitution, "Sea Coast and Inland Fisheries" came under the jurisdiction of the Federal Government of Canada. While this single reference in the Act to inland fisheries is extremely brief, its effect in determining the division of authority in all later years has been dominant.

In 1868, during the first session of the new Federal Parliament, the Federal Fisheries Act was passed, and the Department of Marine and Fisheries, the first of its kind ever to exist, was established. The duties of administration were carried out by that department over the following thirty years during which time progress is evident in a number of areas. The enforcement of fisheries regulations began with the appointment of federal fishery officers who were invested with magistrate's powers. At the beginning of the thirty-year period, the collection of statistics on fish catches and values was introduced, an innovation which drew acclaim as a most progressive step. Also, following a period when fishing "stations" were leased on a seasonal basis, a system of licensing fisheries, according to the type and amount of gear being used, was adopted. Basically, the same system is in use today.

The limits of federal jurisdiction over inland fisheries were not clearly defined in the British North America Act, and it was not long before several provinces, including Ontario, challenged the right of the Federal Government to enact regulations and collect revenue. Provincial fishery legislation was passed by Ontario and by other provinces, and while this did little to detract from the powers being exercised by the Federal Government, it caused the matter of fishery rights to be taken before the highest courts. In 1898, the Privy Council in London ruled that property rights in fisheries and, in consequence, the issue of leases and licences, are vested in the Province.

However, Ottawa retained the power to enact fisheries legislation.

With this decision, the Provincial Government entered actively into certain phases of commercial fishery administration. The organization entrusted with the newly defined responsibilities was a five-man commission known as the Game and Fish Commission. This Commission had been created by an Act passed by the Provincial Legislature in 1892 but had lacked the authority to deal positively with fisheries matters during the first six years of its existence. A Fisheries Branch, subordinate to the Commission, was soon established to take over Dominion records and documents and the granting of licences. In addition, provincial fishery officers were appointed.

Records draw attention to the fact that by 1903 it was common practice to refuse new licences "if it was considered that as many licences had been issued as the fishery would stand, or if it was thought that the issue of a new licence would prejudice the livelihood of another fisherman". This is noteworthy, for this practice, termed "limiting entry", and regarded today by both biologists and economists as necessary, is only now being adopted by some agencies on this continent.

An interesting departure from the usual system of licensing fisheries occurred in this period. In 1902, Lakes Nipigon and Manitou in northern Ontario were leased for twenty-years to two fish companies. Large sums were to be paid in rent annually, and licence fees also were to be paid for nets used. In addition, each company was to build and maintain a hatchery for the replenishment of fish stocks. Neither agreement was fulfilled to any degree; the Nipigon enterprise failed to develop, apparently for lack of transportation facilities, and the Manitou firm, while it did construct a hatchery and make other preparations for operation, did not remain in existence long.

In 1907, an Act was passed which abolished the Game and Fisheries Commission and gave control of fish and game matters to a new branch of the public service, known as the Game and Fisheries Branch. It later became the Department of Game and Fisheries, first under the Minister of Public Works, then under the Minister of Mines, and eventually under its own Minister of Game and Fisheries. Initially, the permanent staff consisted of a superintendent (who was in charge), two inspectors, and one warden in each of seven districts.

Divided jurisdiction, in the earlier years of administration by the Department of Game and Fisheries, did not work to the satisfaction of either provincial or federal authorities. The Province was highly critical of federal fisheries legislation, particularly that which permitted commercial fishermen to net fish during spawning periods. In turn, the Province was criticized by Ottawa for its licensing system which made no allowances for variation in catches. However, in 1915, the Federal Government consulted with the Provincial Department with regard to amendments of the fisheries regulations. This step led to a warmer relationship, further efforts toward co-operation, and a greater acceptance of the situation.

Conditions caused by World War I resulted in fisheries administration in Ontario venturing into the area of sales control. In 1918, the Fish Sales Branch was established under the Department of Game and Fisheries by a

310-pound sturgeon, taken at Batchawana Island, Lake Superior, June, 1922.

special Act. Its purpose was to secure fish and see that they were placed at fixed prices on the tables of Ontario consumers. This was accomplished by requiring fishermen to deliver to the Branch any amount of fish which might be demanded, such amount not to exceed twenty percent of the total catch. In return, the fishermen were paid prices based upon the average price over the

previous five years. The need for this Branch ended shortly after the termination of the war, and it was discontinued in 1922.

The appointment of a biologist, H.H. MacKay, in 1925, and the establishment two years later of the Biological and Fish Culture Branch under his direction, represented a major turning point in the course which fisheries management had thus far taken in Ontario. Fisheries investigations were initiated, and the first steps were taken to replace opinion, which had long been the basis for decision, with facts. MacKay and W.H.R. Werner, who joined him in 1930, were the only biologists in the Branch, but they were assisted in their many and varied investigations by more than a score of graduate and under-graduate biology students from leading universities who were hired in summer seasons.

After 1946, when the Department of Game and Fisheries was incorporated into the Department of Lands and Forests, a period of re-organization followed during which Dr. W.J.K. Harkness, the appointed Chief of the Fish and Wildlife Division, created four Sections to deal with enforcement, wildlife, game fish and commercial fish. W.H.R. Werner, whose activities in the former Biological and Fish Culture Branch over many years had brought him into contact with commercial fisheries, became the supervisor of the Commercial Fish Section. At the same time, fisheries research was expanded in a newly created Division of Research. Conservation officers were integrated with the established forestry district organization and, in each district, a Fish and Wildlife Supervisor was appointed to direct their activities.

The establishment of the Commercial Fish Section, with a staff devoted entirely to commercial fishery matters, placed greater emphasis on the management of the industry. Closer contact with the fishermen was developed and maintained, and added services were provided. Fishing regulations, as they pertained to commercial operations, were reviewed and revised; greater and more careful attention was given to the licensing of fisheries; and a better statistical system for recording fish landings was devised.

One of the first actions of the section was to introduce a compulsory "daily report" of fishing effort and catch, submitted monthly by the fishermen. The use of this report in the collection of fishing statistics has since enabled fishery managers and researchers to determine the condition of a fishery by relating harvest to fishing intensity; improved information on prices received for the fish also was available. Later, computer methods were introduced providing easier access to the vast quantity of fishing data collected, and greater scope for its analysis. This has been of inestimable value, both in determining the effects of price levels on fishing effort and in assessing the value of commercial fisheries to communities and to the Province.

The Section may also be credited with a second major innovation during its first year. Inland lakes in remote areas of northern Ontario were being opened to commercial fishing by Indians at that time and, to regulate the amount of fish being harvested, quotas were introduced for the first time. More recently, the quota system has been applied to control the commercial catches of lake trout in Lake Superior. When the quantity of fish that should be

No.—

PROVINCE OF ONTARIO

SPECIAL FISHERY LICENSE.

ISSUED UNDER THE *FISHERIES ACT*.

1874.

The herein named Robert McDonald

resident of Thurlow, in consideration of payment to be made on the delivery of this license of the sum of Twenty dollars is licensed during the year 1874, as OCCUPANT, for the purpose of carrying on fisheries, of the FISHING STATION, situate and described as follows:

In the Bay of Quinte, opposite Lots 16 & 17, Point Ann, Thurlow for the privilege to fish with a seine one third of the way across the Channel; Also with one boat containing one hundred rods of gill nets on the south side of Big Bay.

NOTE.—Nothing in this License will be held to prevent Angling or Trolling within the limits described; the same being accepted only to such privilege.

The present License requires strict conformity with the various provisions of the FISHERY LAWS now (or hereafter) in force, and to all REGULATIONS emanating from the GOVERNOR GENERAL in COUNCIL and DIRECTIONS by FISHERY OFFICERS; in default of such compliance the same will become void and forfeited forthwith, saving moreover the penalties imposed by Law.

W. J. Whitcher

for the Hon. Minister of Marine and Fisheries

COUNTERSIGNED and dated at Belleville this Nineteenth day of October 1874.

for D. P. Bauset

Fishery Officer.

STATEMENT.

QUANTITY AND KINDS OF FISH TAKEN UPON THE ABOVE STATION.

DESCRIPTION OF FISH.	QUANTITY FRESH.	QUANTITY PICKLED.	VALUE FRESH.	VALUE PICKLED.

Reproduction of a licence issued by the Federal Government in 1874.

DOMINION OF CANADA.

PROVINCE OF ONTARIO.

Department of Fisheries.

FISHERY LICENSE FOR HOOP NETS.

(Issued under the Fisheries Act.)

The herein named Thomas McDonald

resident of Point Ann, Thurlow

is hereby licensed to fish with five sets of hoop nets having meshes of 2½ inch extension measure, from 1st January to 1st April 1892

In that portion of the public waters of the Bay of Quinte fronting on Mud Creek and known as the Samuel Geddes fishing ground, Township of Ameliasburgh.

For the purpose of catching Eels, Bullheads, Mudpouts, Catfish and Suckers, only, and no other kind of fish whatever. Said nets to be set so as not to bar the channels. No fry to be caught or destroyed by these nets.

This license is issued on payment of the sum of $ 1.50 for the year 1892, and will be forfeited for any infraction of the Fishery Laws.

S. N. Bennett

For Minister of Marine and Fisheries.

1. Nets must not be set in places known to be frequented by bass or other game fish, nor in marshes, creeks or channels.
2. All Bass or other game fish accidentally caught to be liberated alive, under penalty of the forfeiture of the nets, the imposition of a fine, and the cancellation of this license.
3. All nets to be removed by 1st April.
4. License fee payable in advance, and no nets to be set until such fee has been paid in full.

The granting of this license neither conveys nor implies any right or claim to its continuance beyond the period stated, and is not transferable.

Countersigned and dated at Belleville this 20th day of January 1892.

W. S. Clarke

Fishery Overseer.

Reproduction of a licence issued by the Federal Government in 1892.

taken can be accurately determined, quotas provide the best means of regulating harvest and, for this reason, the use of quotas in other areas and for other species is planned for the future.

Initially, a biologist and a statistician were the only key Section personnel. However, increases in the amount and complexity of work undertaken have since led to the addition of others. In 1949, M.J. Brubacher, who has shared with Mr. Werner an appreciation and understanding of the economic as well as biological aspects of administering commercial fisheries, joined the staff. Later, in 1966, he succeeded Mr. Werner as Supervisor. A third biologist position, dealing primarily with the establishment and administration of quotas, was added only this year.

During the past decade, commercial fishermen have been confronted by higher operating costs and in many areas by major declines in the stocks of species which traditionally supported their operations. Adjustments have been necessary. Fishermen have had to develop new or improved techniques as well as to shift their attentions to other available species.

To facilitate these changes, the experimental fishing permit was introduced in 1957. This permit has been issued to commercial fishermen wishing to experiment with new forms of gear not otherwise provided for by regulation. It has also been used to grant authority for exploratory fishing. A prime example is the development of the smelt trawling industry in Lake Erie.

In further response to economic problems facing the fishing industry, the Province recently broadened its activities in providing financial support and direction in pilot studies at both the primary producer and processor levels.

The responsibilities of administration assigned to the Commercial Fish Section have, from the beginning, been shared with staff in the field. All licence applications are dealt with, first, at the field level. Bait fish licences are issued directly by district offices. Enforcement connected with commercial fisheries, the administra-

The first biologists with the Dept. of Game and Fisheries: Dr. H.H. MacKay (left) and W.H.R. Werner at the latter's retirement banquet, December 8, 1966.

tion of quotas, and the collection of fishing reports are duties of field personnel. Another of their important functions is the collection of factual information on fish catches and fishing methods.

The size of the field staff of the Fish and Wildlife Branch, (as the Division came to be called) has been substantially increased since 1946, and district fisheries management officers have been appointed. In areas of particular concern, such as the Bay of Quinte and Lake of the Woods, special management units have been formed.

The efforts of biologists, fisheries management officers, conservation officers and others are progressively being channelled into programs to monitor fish populations through the examination of catches. The data obtained are being used to describe the characteristics of individual fish stocks, to detect changes in abundance, and to measure the effects of human and natural factors. With the information so gained, sound management programs and practices are being developed.

In early years, changes in regulations and organization resulted from the work of several committees which were appointed by the Province to "enquire into fisheries and wildlife matters and to report". The first of these, active between 1890 and 1892, led to the establishment of the Game and Fish Commission referred to earlier. A second special commission, appointed for a three-year term in 1909, had much to report and recommend in regard to commercial fisheries, but many of its recommendations were overly restrictive and were never adopted.

In recent years, two agreements have been negotiated which have had direct bearing on fisheries programs in the Great Lakes. In 1955, Canada and the United States agreed to the formation of the Great Lakes Fishery Commission, consisting of three commissioners from each country. Its duties include the control of the sea lamprey and the co-ordination of fisheries research. A Federal-Provincial Agreement on Ontario Fisheries, reached in 1959, defined the responsibilities of the two governments in fisheries matters on the Great Lakes. Lamprey control, fisheries research on Lake Superior and economic and technological studies were designated as federal activities. Fisheries research on the other Great Lakes, the collection of routine statistics, and hydrographic studies of a general nature were established as provincial responsibilities. The value of these two agreements may best be seen in the extent to which various provincial, state and federal authorities have, through co-operation, been able to reduce lamprey and partially restore the lake trout in Lake Superior.

Many improvements in the administration of commercial fisheries have stemmed from the constructive criticism of the fishermen through their various associations or from the Ontario Council of Commercial Fishermen. In addition, a significant contribution has been made by the Ontario fishermen in promoting the development of the industry for the economic benefit of the Province.

At present, in Ontario, fisheries jurisdiction is still shared by the Federal and Provincial Governments. Commercial fishermen are licensed by the Province under the authority of The Fish and Game Act. However,

Sturgeon from Lake Erie and two employees of McLean Brothers of Wheatley.

fishery operations are largely controlled by the Ontario Fishery Regulations which are made in Ottawa. In effect, the Province is in charge of fisheries management in Ontario, and, with the exception of fish inspection regulations, is now essentially a Provincial responsibility.

Pollution, dwindling stocks of some species, lamprey predation, competition with a growing sports fishery, and increasing costs are problems which, to many commercial fishermen, may seem as dark clouds on the horizon. But there is cause for optimism. More people are seeking to solve the problems of the fishing industry than ever before. The attack on pollution in the Province is gaining momentum. An increasing number of investigators are in search of facts concerning fish populations and their habitat. Introduced species, such as kokanee and splake , hold promise for improved fishing. The threat of the lamprey is being removed. Products are being developed from those species of fish which are readily available, and new methods are being developed to efficiently effect their capture. Furthermore, both the Federal and Provincial Governments are entering into more co-operative programs to assist in development and bring stability to prices.

As nations become increasingly aware of their dependence on the products of the seas and lakes for food, the commercial fishery will face new challenges.

Hunters with moose at Cripple Lake, McCraney Township, 1917.

GAME MANAGEMENT IN ONTARIO

by D.W. Simkin
Supervisor, Game Management Unit

Game management in Ontario has had several faces in the last hundred years. Until 1946, it consisted mainly of opening and closing seasons, setting bag limits and enforcing the regulations pertaining to these actions. Exceptions to this routine were the introduction, of propagation and distribution upland game birds, namely, the ring-necked pheasant and the Hungarian partridge. Also noteworthy was the paying of bounties on timber wolves, coyotes and bears.

With the amalgamation of the Departments of Game and Fisheries and Lands and Forests, in 1946, the Division of Fish and Wildlife was born. Under the leadership of the newly appointed Chief, W.J.K. Harkness, and the Supervisor of Wildlife, Dr. C.H.D. Clarke, the Division was developed with the objective of managing game on the basis of scientifically proven facts. This was a marked change from the philosophy which previously prevailed. As a result, more progress has been made in game management in the past 20 years than in the 80 years before.

This is very fortunate, for with the burgeoning population, especially in urban Ontario, and the growth of the affluent society, there is an ever-increasing army of outdoorsmen in pursuit of the healthful recreation that wildlife provides. With the increasing demands being put on our wildlife, there is, every day, more reason for applying the scientific method to the management of game. Stocks must be carefully calculated with the harvest of the available crop in mind. In this day and age of increased demands it is just as much an error to underharvest a game species as it is to overutilize it.

Although this "history" will deal mainly with the post-1946 era, it is of interest to look back to the early days of commissions and game wardens.

Many of the regulations which affect hunting in Ontario had very early beginnings. For instance; the prohibition of Sunday hunting dates back to 1839; our southern Ontario deer season has been of two weeks duration, and in the month of November, since 1892 when an Act proclaiming a November 1st to 15th season was passed. No doubt, all deer hunters have participated in "discussions" concerning the use of dogs for deer hunting. In 1895, the five members of the Game and Fish Commission discussed this topic and the pro-dog faction won by a narrow three-to-two margin.

In the 1890's ring-necked pheasants were imported and stocked mainly in parts of agricultural southern Ontario but with some plantings also in locations as unsuitable as Algonquin Park. Pheasants adapted very well to much of the cleared area, particularly in the southwest. In 1922, the government started to raise pheasants for release to the wild and for many years three hatcheries were operating; one at Eugenia, another at Normandale and the third at

Codrington. The latter two are still in operation with the total annual production of about 50,000 units comprising eggs, chicks, poults and adults.

The initial introductions of pheasants came at a very opportune time, for with the clearing of the luxurious hardwood forests of southern Ontario, the prime range of wild turkey was gradually dwindling. By the turn of the century, turkeys were hanging on precariously in Essex and Kent Counties but shortly afterwards these flocks also fell victim to the removal of prime beech-oak forests and the turkey became extinct in the Province.

In 1908, the famous Jack Miner goose sanctuary was started at Kingsville. The spectacle of migrating geese, attracted to this sanctuary, is known by many throughout North America. Miner's technique of attracting geese is the same as that used by game management departments throughout much of North America to manage the present day goose flocks.

In 1912, the European hare or jack rabbit was accidentally released from a farm in the Brantford area. This accident has provided much recreation and many thrills to hunters as well as many headaches to others, notably those who make their livings from orchards.

In 1917, the Federal Government ratified the Migratory Bird Convention Act. This was probably the single most important legislation ever passed to ensure wise use of our migratory birds. This Act ensured uniformity of regulations pertaining to the use of birds which migrated from Canada to the United States.

Also in 1917, in Grey County, the first Crown Game Preserve in Ontario was established. Its purpose was "to create as well as stimulate interest in the better protection of our beautiful songsters and other birds". Within the year, Jack Miner's farm at Kingsville was also made a Crown Game Preserve. Since that time, literally hundreds of areas have been set aside as Crown Game Preserves. With the accumulation of better information on the requirements of certain species, and on the knowledge of their behaviour it has been determined that a high proportion of the game preserves did not serve the intended purpose. As a result, in recent years, we have seen many of the old Crown Game Preserves abolished. However, there are still more than 50 Crown Game Preserves in existence.

A special committee, 1931 to 1933, made several recommendations on the game situation. One was that the Game and Fisheries Act "be codified and extricated from misunderstanding." Another was that all resident hunters of the Province over 15 years of age be required to buy a gun licence at a price of $1.10.

In 1937, 27 townships of southern Ontario were established as Regulated Game Preserves. This was the result of tremendous hunter interest in the ring-necked pheasant. Township authorities became so concerned with the large numbers of hunters in the field, especially on the opening day of pheasant season, that they sought and obtained the authority to limit the numbers by issuing only a specified number of licences to non-residents of the particular township. This system proved so popular with the townships that by 1940 there were 71 Regulated Game Preserves.

In 1946, the Game and Fisheries Act was revised, and one of the more significant revisions was the one dealing with Regulated Townships by "Authorizing townships or township organizations approved by the Minister to issue and charge fees for licences to

Foster's Hunt Club at Powassan, Parry Sound District, 1904.

Hunters bring in game at Powassan, Parry Sound District, 1904.

hunt during the open season, pheasants and rabbits within the township and within the lands controlled by the township organizations".

Probably the greatest difference between the pre-1946 and post-1946 eras was the degree to which a knowledge of animal ecology was applied to game management. In the earlier era, it was apparently believed that as long as seasons were of proper length and the number of hunters was not too great, crops of game could be taken on a sustained yield basis. This type of thinking did not consider the effects of the environment on the animals. As a result, in spite of closed seasons, the turkey became extinct, bobwhite quail became very scarce, and woodland caribou, which were once fairly common as far south as the Nipissing drainage system, became extremely rare on most of their southern range. The reason for these changes, as we now know, was the destruction of habitat mainly caused by the influence of man the agriculturalist, the timber operator and the fire-setter. Now, habitat manipulation is recognized to be one of the most powerful tools of game management, and the length of season is considered to be of secondary importance.

The facts, upon which this thinking is based, have been collected or analyzed since 1946 when wildlife technology really came into its own. Training in wildlife ecology and management for non-technical field personnel was begun at the Forest Ranger School at Dorset in 1946. Initially, there was a two-week course but since it has been a 33-week course dealing with all phases of resource management.

The game wardens were renamed Conservation Officers in 1948. This signalled a major change in the game management program. Instead of a large group of enforcement officers, the back bone of the Division was an increased cohort (from 136 in 1940 to over 200 in 1948) of trained officers who, as well as doing enforcement work, collected such data as sex and age ratios of game in the kill, and brood counts of bird species, all of which are basic to monitoring the status of game species.

Since 1958, special advanced fish and wildlife courses have been offered to graduates of the Forest Ranger School (in 1966, renamed Forest Technical School) who have subsequently gained several years field experience since graduation. This training has played a key role in the success of game management in the Province.

At the time that the Fish and Wildlife Division was formed, there were very few trained fish and wildlife field biologists available. As a result, by 1949, there were only three game biologists in the Division. Recognizing the need for technical personnel, the Department loaned Dr. Tony DeVos, a head office game biologist, to the Ontario Agricultural College. There he was instrumental in organizing the first university program in Ontario designed to produce fish and wildlife ecologists. The first student of this course was graduated in 1954. By 1959, three more biologists from the Department were added to the College staff, and graduates were beginning to be fed back into the Department.

Commencing in 1946, deer checking stations located at strategic points during the hunt were used to collect biological information. By this means, evidence was obtained to show that deep-snow winters were critical to the survival of deer. Following the extreme winters of 1947-48 and 1955-56, large

Hunters at their camp, 1903.

gaps in the age distribution of deer killed by hunters were apparent. The deep snow in these years limited the availability of food and the mobility of deer causing severe cases of deer malnutrition which resulted in mortality among the embryos and fawns.

With this knowledge, Department biologists were able to predict accurately that the severe snow winters of 1958-59 and 1959-60 would be followed by a serious decline in the number of deer, particularly fawns and yearlings, available to hunters the next fall.

In 1949 and 1950, the moose season was closed because of a fear that the moose population was severely reduced, and also because of the common belief that the rate of increase in the moose herd was only about 17 percent. There was at that time, no reliable information on moose numbers or reproductive rates. During the next few years, techniques were developed and an aerial survey of the moose range showed that there were 125,000 moose in the Province. Reproduction studies between 1957 and 1961 showed rates of increase on good range were about 34 percent. Based on such information and the realization that man the hunter is, under normal circumstances, inefficient in controlling big game numbers, the moose and deer seasons in the northern areas and the deer seasons

in the southern areas were set for three-year periods beginning in 1959. In 1966, there were 60,000 hunters who killed 15,000 moose in the Province.

In 1961, a deer range improvement program was initiated in a few of the important wintering areas in recognition that it is the condition of winter habitat rather than predation by man or wolf that determines deer survival. During 1967, this program is being greatly expanded with the intention of effecting deer range improvement in all of the major wintering areas of the southern range.

The post-1946 attitude to game management has resulted in more liberal harvest regulations providing much greater recreational opportunity, particularly with small game. For instance, in the old days, seasons and bag limits for ruffed grouse were adjusted in accord with the position of the population in the "cycle" thus inferring that the take by hunters was exerting an influence on the overall populations. Field studies on this species have shown that hunting take has little influence on grouse numbers and that regardless of hunting regulations, the grouse populations will continue to fluctuate greatly with a "cycle" of about 9 years between highs. Accordingly, grouse seasons remain long and bag limits liberal thus permitting maximum use by hunters.

Waterfowl are among the most important of our small game species. Because they are migratory, it is especially important that we get good information on their status in Ontario and in the parts of the range which they use outside the Province during the winter. To meet these requirements Ontario became a member of both the Atlantic and Mississippi Flyway Councils during the early 1960's. Through this affiliation, there has been an intensification in the effort made to band large numbers of certain species of ducks in Ontario. Analysis of banding data shows where our ducks migrate and the proportion harvested by Ontario and other member areas of the Flyways. Such joint efforts between the Province and the Flyway Councils have led to the development of an aerial survey method for estimating Canada goose production. These surveys conducted during the summer are of value in determining the allowable harvest during the fall shooting season.

In 1961 the Ontario Waterfowl Research Foundation was formed. Data collected by this organization will provide for increasingly sound management of Ontario's waterfowl species.

To provide more opportunities for small game hunters, three new types of hunting areas have been developed in southern Ontario. They are: controlled waterfowl hunting areas, controlled pheasant shooting areas, and all-purpose public shooting areas The purpose is to provide quality small game shooting for the public on small, intensively managed areas. Although the first of these has been in operation only since 1961, they are proving to be very popular particularly with hunters from congested urban areas. During 1966, 4,531 hunters used the waterfowl areas, 3,484 used the pheasant areas, and a large but unknown number used the all-purpose areas. To augment and enlarge these areas, the Department is presently engaged in

Hunters pose at Gull Lake, Muskoka District, 1906.

an extensive program of land acquisition.

Wolves and black bears have long been a controversial topic in Ontario. The first bounty was offered for wolves and bears in 1793. Since that time and until recently, both have been treated as completely undesirable elements in the fauna. However, in 1961, the black bear became protected under the Game and Fish Act and, since then, it has been treated as a big game animal for which a licence must be purchased in order to hunt it. This came about because of the increased interest in trophy bear hunting, particularly by non-residents during the last 10 years.

The management of wolves is still a very contentious issue. In recent years, a growing number of naturalists have presented cases for abolition of bounties and treatment of wolves like any other member of our fauna while on the other hand individuals and groups representing livestock owners' and deer hunters' interests have gone so far as to advocate the virtual extermination of the species in certain areas. Based on an assessment of the situation and the establishment of trained predator control officers within each of

Hunters with their game at Cookstown, 1910.

the Forest Districts, the Department's policy is that, wherever legitimate wolf problems occur, predator control officers will attempt to remove the particular animal or group of animals by instructing landowners in methods of capturing wolves. They will also participate in the trapping program when necessary. This policy recognizes the fact that only a few wolves cause most of the trouble and it is they which should be dealt with in a predator control program.

It is apparent that the game management program in Ontario has gone far towards realizing the goals of achieving the widest possible public use of the wildlife resources consistent with sustained yields, as set down by the Chief of the Fish and Wildlife Branch. At the rate that scientific information, related to wildlife resources, is accumulating, and public use is increasing, it would be very interesting indeed to be able to report on the progress made in Ontario in the next 100 years.

The present day type of game management program, based on scientific facts and accompanied by adequate public confidence and support, should ensure that the future of our game populations will be excellent and the pursuits of future hunters should be as well met. It is apparent, however, that in the future the effort required to provide wildlife populations with habitats and hunters with areas in which to hunt, will be greatly increased. In this day and age of increasing numbers of hunters there is an ever expanding need for facts and funds to plan and carry out the intensive management schemes required to provide wildlife-based recreational activities.

AN HISTORICAL REVIEW

OF THE MANAGEMENT OF THE SPORT FISHERY IN ONTARIO

by G.C. Armstrong
Supervisor, Game Fish and Hatchery Unit

Fishing, or angling in modern parlance, is a vitally important segment of Ontario's heritage. From the earliest days, the fisheries resource of the Province has played a prominent role in the domestic scene. It lured the attention and interest of the pioneer explorers and the early settlers as it did the native Indians, who cherished it as a staple food and as a virtue for its challenge to their natural prowess and as a morale builder. Over the years, the emphasis on need and use of the resource gradually shifted from one of providing sustenance for a few to one of providing recreation for many, and, while the character of the fishery has changed, the resource has continued to provide an inestimable and ever-increasing benefit to the health and welfare of the people and to the economy of the province and the nation as a whole.

Fortunately, the resource has weathered the initial onslaught of man's inhabitation and the accompanying wanton destruction of natural habitat with remarkable success. However, the apparently inexhaustible abundance of yesteryear has long since passed and, for a century and longer, it has become increasingly more evident that our renewable resources are not as indestructible as once thought. As the population grew and land settlement spread into hitherto wilderness areas, so went many of the natural environments which once supported highly prized fish populations. The competition from man, with his agricultural and industrial developments, and the resulting impairment and outright destruction of habitat soon sliced into the range and reduced the availability and supply.

Consequently, many changes have taken place in the distribution and relative abundance of a number of Ontario's 135 fish species since the earliest days of exploration and settlement. However, in retrospect, it is indeed remarkable how relatively few major significant changes actually did occur. True, we can cite the regrettable disappearance of the renowed Atlantic salmon from the waters of Lake Ontario somewhat less than a century ago. We can also refer to a number of successful introductions, including such exotic species as carp, *Cyprinus carpio*, rainbow trout, *Salmo gairdnerii*, brown trout, *Salmo trutta*, and the Ouananiche, or landlocked Atlantic salmon, *Salmo salar*, and to the invasion and spread of others, such as smelt, *Osmerus mordax*, alewife, *Pomolobus pseudoharengus*, white perch, *Roccus americanus*, and the sea lamprey, *Petromyzon marinus*, which have had a significant influence on the resource.

In addition to these, there have been the many, more subtle changes in population dynamics, involving complex shifts in the species composition and the re-

lative abundance which have taken place, and which are currently in a continuing process of change, in many of our more accessible waters. However, despite these alterations, which are directly attributable to man's seemingly, unwitting faculty to adversely affect natural environment, the resource has sustained itself at a reasonably high level.

Throughout most of the history of Ontario, the management of the fisheries resource has been largely a matter of governmental control and restriction. Commencing early in the 19th Century, the people of Upper Canada became gravely concerned with the decline in Atlantic salmon in Lake Ontario, and in 1807, the first legislation respecting fisheries was passed by the House of Assembly of the Province of Upper Canada. The legislation, "An Act for the Preservation of Salmon", prohibited the taking of any salmon from any river or creek, or from or near the mouth of any such tributaties in the Districts of Home and Newcastle. This, then, was the first of a long list of government actions which were to follow during the next century and a half.

However, prior to the turn of the century, fisheries management by legislation and regulation served little useful purpose. Laws were passed, but no provision was made for effective enforcement. Conflict between the Federal and Provincial Governments over the question of constitutional jurisdiction created confusion and nullified authoritative control. The British North American Act gave the Federal Government jurisdiction over fisheries but assigned the responsibility for "all matters of a local and private nature" to the Province, with the result that both agencies assumed responsibility but neither was successful in effective administration of the resource.

In 1885, the Province established its first fisheries legislation in passing "The Ontario Fisheries Act". The Act provided for the administration of fisheries by the Commissioner of Crown Lands. It also established closed seasons for speckled trout, pickerel, bass, maskinonge, whitefish, and salmon trout (lake trout), and set forth various provisions for leasing waters and for the taking of fish.

However, it was not until 1892, when the report from the Provincial Royal Commission on Game and Fish was issued, and public interest was aroused about the ruthless exploitation and waste of fish and game, that the Province took a firm stand. Its first action was to rewrite the fish and game laws and to make them more stingent. In fisheries, fishing for speckled trout, bass, pickerel and maskinonge was restricted to angling; creel limits were set for bass and speckled trout at 12 and 50 fish per day, respectively; and minimum size limits were established at 10 inches for bass and five inches for speckled trout. Penalties for violation were increased and, for the first time, four full-time game wardens were employed at ten dollars per month to enforce the fish and game laws.

Following the report of the Royal Commission and the subsequent move by the Province for greater control over its inland fisheries, the controversy over constitutional jurisdiction was finally referred to the Judicial Committee of the Privy Council of Great Britain for clarification. The decision reached by the Committee in 1898 ruled that the supreme jurisdiction in regard to fishery regulations was the responsibility of the Federal Government, and that the proprietary rights to the resource were vested in

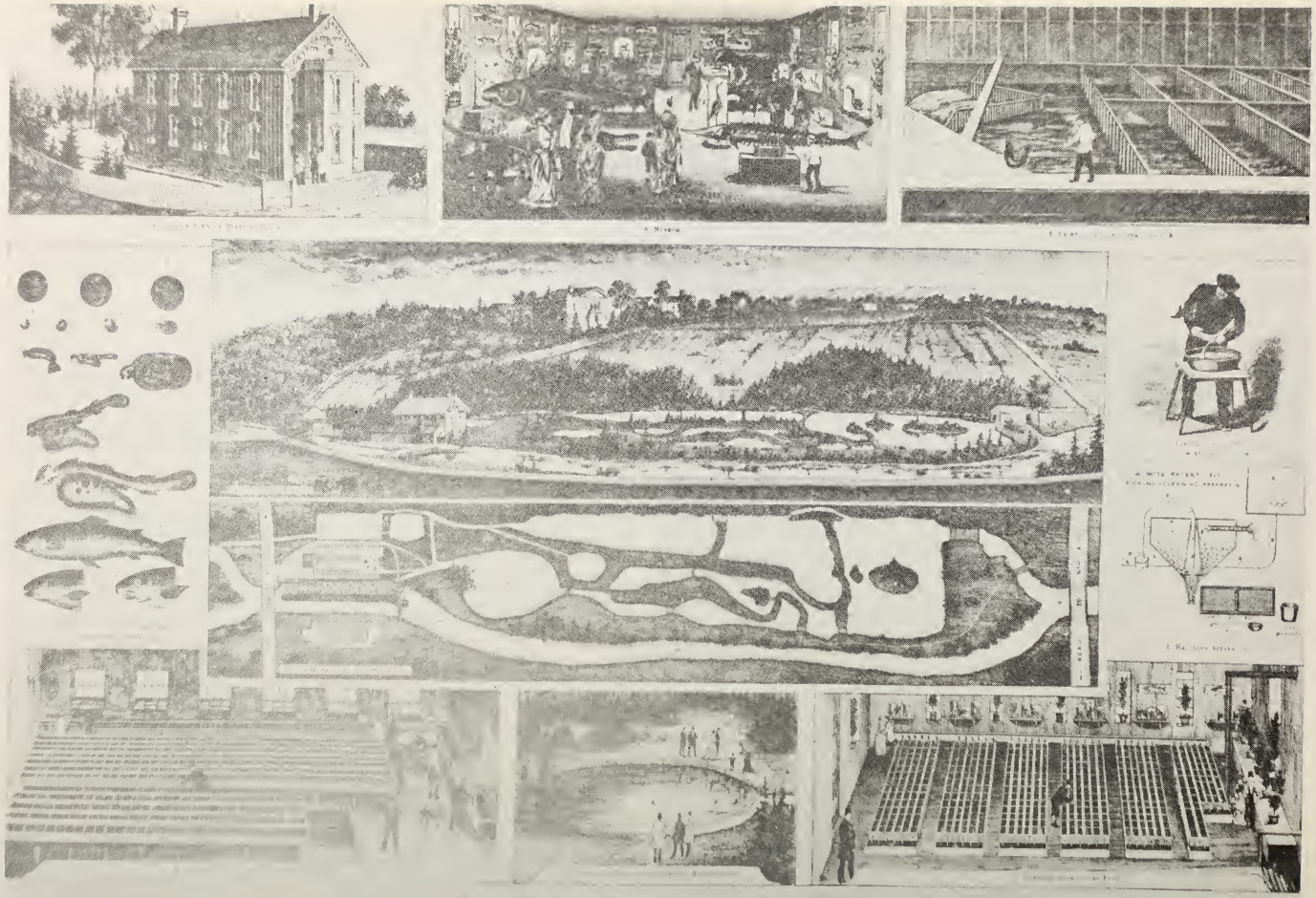
Walter Spreadborough, early naturalist and fire ranger, with musky, French River.

the Provincial Government of Ontario—an arrangement which, incidentally, is still in effect.

From 1892 until 1898, the fisheries in the Province were administered by a Game and Fish Commission. Subsequently, a separate Fisheries Branch was established under its own Commissioner, F.R. Latchford, within the Department of Public Works. In 1907, however, the two services were again brought together under one Branch, and they have been administered jointly ever since—first as a Branch, then as the Department of Game and Fisheries and, since 1946, as a Division, or Branch, of the Department of Lands and Forests.

Although legislation and regulatory control have played a prominent part in the history of fisheries management in Ontario, the emphasis, certainly in more recent years, has shifted from a more or less protective approach to one of greater liberalization and use. Initially, as the surge of the pendulum of public opinion dictated more positive and effective protection by restricting the use, so now, in the back swing, attention is being focused on utilization and on achievement of maximum potential benefit.

However, in review of the highlights of the history of management by regulation, it is interesting to note that the closed seasons on speckled trout, September 15th to May 1st, and on pickerel or walleye, April 15th to May 15th, which were first established in 1885, are still effect in certain areas of the Province. It is also noteworthy that the importance of the tourist trade in Ontario was



DOMINION FISH HATCHERY AT NEWCASTLE, ONT.

recognized as early as 1887, when non-resident anglers were first required to obtain a licence at an initial cost of five dollars. Similarly, a number of our other present-day regulations had their origin almost a century ago. Probably the most significant of all was the prohibition of the sale of game fish in 1903, which reserved bass and maskinonge, and later, Atlantic salmon and brook, brown, rainbow and Aurora trout, entirely for sport fishing.

Public concern over the decline in the Atlantic salmon population in Lake Ontario undoubtedly did much to spark the promotion of fisheries management in Ontario. In the first instance, it pressed the government into the establishment of legislation in an effort to control the indiscriminate harvest, and, when this failed, it no doubt influenced the government's decision to enter into the newly-developing field of fish culture and to sponsor the construction of the first government fish hatchery on the continent at Newcastle, Ontario, in 1868.

Although this venture by the Federal Government was somewhat speculative, it was not entirely without justification, for the existing hatchery was owned and operated by Samuel Wilmot, a very knowledgeable and experienced fish culturist of the time. He was a specialist in his own right, having successfully completed the artificial spawning, fertilization and hatching of salmon fry. He had, in fact, initiated his experimental studies on salmon culture in 1865, and had progressed to the point of planning the development of his own private hatchery and fishing preserve before being thwarted by the Federal Government when he tried to obtain the exclusive rights to a portion of the Lake Ontario shore near the mouth of Wilmot Creek. However, when the Government entered into the field of fish culture, Wilmot offered his services and was placed in charge of the newly constructed hatchery.

Increases in the abundance of salmon during the first decade following the establishment of the Newcastle Hatchery prompted an optimistic view, and the Federal Government proceeded with the development of other fish culture stations in the Maritime Provinces. But, unfortunately, the increase in the Ontario salmon was short-lived. By 1879, the runs had declined drastically, and by 1883, as a result of man's destructive activities, most of the runs in the tributary streams had completely disappeared, spelling the doom of the Atlantic salmon in Lake Ontario.

Despite the failure of the Newcastle Hatchery to sustain the salmon fishery, fish culture was by then a well established practice, much to the credit of Samuel Wilmot, who received wide acclaim and international recognition for his ingenuity in the design and development of hatchery facilities and fish culture techniques. His designs and practices were widely adopted by Government and private hatcheries, and many of his in-

A page from the Dominion Report for 1877 depicts Samuel Wilmot's salmon hatchery at Newcastle. The top row shows the breeding house (left), museum interior and reception house interior. Left of the ground plans are 15 stages in the development of the egg. On the right is shown the fish-stripping process (top) and Wilmot's Patent Self-Picking & Cleaning Apparatus. Below are the breeding rooms: lower flat (left) and upper flat. In the centre, top hats and parasol admire the Pond for Retaining Fish After Manipulation.

novations are still in use in modern hatchery facilities.

It is not surprising, therefore, that much emphasis was placed on this field of activity in the early stages of fish management in Ontario. Hatcheries were constructed initially only by the Federal service, but, in 1909, the Province undertook the rearing of bass on an experimental basis and later, in 1911, bass rearing ponds were permanently established at Mount Pleasant. Subsequently, the Province expanded its hatchery program for game fish and, in 1926, also took over the operation of the eight remaining Federal Government hatcheries in the Province. From this time through the early 1950's, the fish culture program in Ontario continued to expand until the Province was eventually operating a total of 29 stations, including 12 trough and jar hatcheries for the production of eyed eggs and fry of commercial species, and 17 pond and rearing stations for the production of game fish species, which were generally reared to the advanced fingerling or yearling stage.

Commencing in the 1940's, however, fisheries workers scrutinized more closely the results from hatchery plantings and, particularly, the returns from plantings of eyed eggs and fry. Following a period of extensive research, it became clearly evident that restocking with fish in the eyed-egg or fry stage of development produced little or no significant contribution to the population of a naturally produced year class of fish in waters where the species was already established. Evidence was obtained to demonstrate that populations could be successfully established by such plantings in new waters where suitable environmental conditions were available, but, even under these somewhat uncommon circumstances, it was apparent that equal or better success might be expected from plantings with older stock and, preferably, with mature fish.

As a result of these findings, the Department altered its policy respecting fish hatcheries in the mid-Fifties. During the course of the next six years, ten hatcheries, including seven stations engaged in the incubation and hatching of eyed eggs and fry, and three pond or rearing stations used for the culture of bass and trout, were closed, reducing the number of operating hatcheries to seventeen by 1961. The former were closed mainly on the basis of the poor returns obtained from eyed-egg and fry plantings, while the latter operations were discontinued because of unsuitable water supplies which had deteriorated over the years, preventing continuous and efficient production.

Although the number of hatcheries has been greatly reduced in Ontario, the importance of fish culture is nonetheless recognized as being valuable as a tool of management. It continues to form a significant part of the Provincial program. The Department is presently operating sixteen hatcheries, including eight large trout rearing stations, six pond stations and two trough hatcheries (the last remaining jar-type hatchery was closed during the current year). It is also actively engaged in an extensive program of renovation and modernization of existing facilities, and in the development and use of new and improved procedures in fish culture, in distribution and planting methods. Production is directed primarily to the culture of native game fish species but, in more recent years, special attention has been given to the culture of other exotic species and specialized stocks such as the kokanee and the hybrid splake. The production of lake trout and splake has also been

Indian Fishing by Torchlight. Reproduction of a painting from the office of Hon. J.R. Simonett, Minister of Energy and Resources Management.

increased, principally for immediate use in the rehabilitation of the fisheries in the Great Lakes which were previously devastated by sea lamprey predation.

Probably the most significant event in the history of fisheries management in Ontario, prior to the amalgamation of the Department of Game and Fisheries with the Department of Lands and Forests in 1946, was the appointment of H.H. MacKay as the first full-time professional biologist in 1925. Under his guidance and influence, and with the help of his assistant, W.H.R. Werner, and Professors W.J.K. Harkness and J.R. Dymond of the University of Toronto, fisheries management in Ontario was gradually molded into an effective program based on results from scientific investigation and interpretation. He was later appointed Director and Chief Biologist of the newly created Biological and Fish Culture Branch in 1928, with its modest staff of two permanent biologists and seasonal assistance from university students, and was responsible for the administration and management of the resource until 1946.

It is interesting to note that concurrently with this change in 1926, the inaugural meeting of the Toronto Anglers Association was held in the Y.M.C.A. in Toronto. As related by the celebrated, Canadian outdoor writer, Greg Clark, the

meeting was attended by some sixty sportsmen, among whom were Professors W.J.K. Harkness and J.R. Dymond, who took an active part in organizing and designing the form and course of the Association, which was later to become the Federation of Anglers and, eventually, the Federation of Ontario Anglers and Hunters—an organization which has contributed no small amount in shaping the destiny of fisheries and wildlife in Ontario.

By far the most important milestone in fisheries management in Ontario occurred in 1946 when the Department of Game and Fisheries was amalgamated with the Department of Lands and Forests. Since the merger of the two Departments, the activities within the field of fisheries and wildlife have been greatly extended and enlarged. As might be expected, the union of the two organizations was not without incident and some malcontent among personnel within both agencies. But, after a relatively short period of time, the staff and the activities of the former department became reasonably well established and integrated with those of the Department of Lands and Forests, and the combined forces soon became molded into an efficient resource management unit, which has continued to operate in this capacity to the present.

Under the new fish and wildlife administration, headed by Dr. W.J.K. Harkness, Chief of the Fish and Wildlife Division, and assisted by Dr. C.H.D. Clarke, Supervisor of Wildlife, Dr. H.H. MacKay, Supervisor of Game Fish and Hatcheries, W.H.R. Werner, Supervisor of Commercial Fish, and J.F. Farrington, Supervisor of Law Enforcement, new policies and procedures were established which, to a large degree, are still in effect and continue to provide important guidelines for present day management. Under Dr. Harkness' administration, Department policy changed drastically, and the emphasis on management was shifted from prohibition and protection to wise use, based on scientific knowledge—a policy which, basically, provided the framework on which management practices have been developed over the past two decades.

The re-organization and the following change in policy of the Department was indeed timely and advantageous for fisheries management in Ontario. By this time, fisheries science had advanced to the point where a good deal was known about the life histories of the more important fish species and their environmental requirements. The qualities of an aquatic environment could now be measured, and the ecology of various fish species was more clearly understood. Equally important was the ability of fisheries workers to age fish. This break-through enabled scientists to determine the strength of age classes of fish in a population, to assess recruitment, and to make short-term predictions of the health and strength of a specific fishery. It was then possible to undertake more meaningful investigations and to make pertinent and constructive recommendations for management use.

In Ontario, the leaders in this scientific field of fisheries research were such men as Professors W.J.K. Harkness, J.R. Dymond, Dr. F.E.J. Fry and Dr. R.A. Langford, all of whom were associated with the University of Toronto and the Ontario Fisheries Research Laboratory. Although fisheries research was not undertaken by the Department prior to amalgamation, University studies were carried out under the direction and guidance of these men at the University and at the field laboratory located at Lake

A northern pike, taken from Georgian Bay near Parry Sound, 1915.

Opeongo in Algonquin Park.

Following the amalgamation and reorganization of the Department in 1946, the number of staff in the Fish and Wildlife Division was increased rapidly. Within a relatively short period, biologists were appointed and assigned to a number of the forest districts throughout the Province. The staff of game wardens was also increased, as was the number

of university students employed for seasonal work. Since 1946, the biological staff has been increased from two to 72 biologists in 1966, and the complement of game wardens, renamed Conservation Officers with greatly expanded duties, increased from 125 to 238 personnel during the same period.

The impact of these increases in personnel on the fisheries and wildlife management and research in the Province is self-evident. Although only a small number of the staff is engaged solely in fisheries management work, a large part of the group is directly involved in some aspect of the fisheries program which, of course, contributes significantly to fisheries management in general.

In addition, the contribution of Conservation Officers who have been promoted into the more specialized field of fish management following some years of practical training after graduation from the Ontario Forest Ranger School (now known as the Ontario Forest Technical School) has added immeasurably to the strength of the technical staff engaged in fisheries investigation. Also, since 1963, the Department has sponsored a special In-Service Training Course for permanently employed personnel engaged in fisheries management work to further their knowledge and contribution to the program. The course, which is of two weeks duration, provides for training on a semi-technical level in specialized fields of study, such as fish diseases, fish nutrition, limnology, lake inventory procedures, etc. Instruction is given by experienced scientists from management and research and from the Universities, and the students are given the opportunity to develop and extend their knowledge in fisheries science in the broadest context.

One program of major significance which has been instituted recently by the Department is the establishment of a Lake Inventory Unit. Although the importance and need for a more intensive inventory program was recognized for many years, to supplement the lake survey studies undertaken by field management personnel, it was not until 1959 that any positive action was taken in this regard. At that time, a special project was established to undertake the inventory of the fisheries resource in the Patricia area of northern Ontario, which was the forerunner to the eventual establishment of a provincial program in 1966.

Dr. Harkness continued as Chief of the Fish and Wildlife Division (now renamed Fish and Wildlife Branch) until his death in 1960. He was succeeded by his former Assistant Chief, Dr. C.H.D. Clarke, who has headed the Branch to the present.

In taking over leadership, Dr. Clarke outlined his aim to achieve the widest possible use of the fish and wildlife resources by the public, consistent with the principles of conservation, and, to this end, has engineered the development and utilization of the resources of the resources of the Province accordingly. Since 1960, he has directed more emphasis on the implementation of a program of full utilization by scientific management. For example, extensive changes have been made by liberalizing the Regulations for angling, which have done much to stimulate winter fishing activity and to promote sport fishing as a recreational venture. The promotion and development of better public access to natural water areas has also been of major importance, as has been the maintenance, and wherever possible, the improvement of the resource and the success of the fishery.

FISH AND GAME LAW ENFORCEMENT IN ONTARIO

by P.A. Thompson
Field Services Unit

Regulations and their enforcement are essential elements in the management of wildlife. Regulations resulting from research and other management activities are of little value unless they are enforced.

The history of wildlife management in Ontario is a story of development from the early days of unrestricted individual and commercial use to the present era of wise control. The earliest game law applying to what is now Ontario was enacted in 1821, when a closed season between January 10th and July 1st was established for deer. There was no bag limit.

In 1839, a more comprehensive Act was passed, establishing closed seasons for all classes of game. The original season for deer was changed to open August 1st and close February 1st. Wild turkey, grouse, pheasant, quail and woodcock could legally be taken from September 1st to March 1st. It also provided that "no person shall hunt or shoot or go out with a gun in the quest of any deer or other wild animal or wild fowl on the Lord's Day (commonly called Sunday) within the Province".

In 1859, when the Statutes of Upper Canada were consolidated, there were certain modifications in the open seasons. For example, the duck season was from August 1st to April 15th – extensive enough to suit most present-day hunters. A wolf bounty of $6.00 was in effect at this time.

In the year following Confederation, the first game legislation was established by an Act of the Province. The big game season was shortened to three months, September 1st to December 1st; the upland game bird and hare seasons, from September 1st to January 1st; and the migratory bird season, from September 1st to March 1st. The sale of game became illegal after fourteen days from the close of the respective seasons. The taking or destruction of the eggs of game birds was prohibited. A trapping season was established from November 15th to May 1st for beaver, muskrat, mink, otter and fisher.

Monetary penalties in pounds and shillings now give way to dollars. Fines were set from a sum of $2.00 to $25.00 for each head of game.

In 1888, bag limits were established for the first time when regulations were enacted prohibiting the taking of more than five deer per person. Concern was expressed at the decline in the numbers of moose.

Although there was a trend to increase regulations during these years, there was apparently little or no effort to enforce the laws effectively. Enforcement was ineffective because it depended for the most part on informers who received half of the fine when a penalty was imposed. The

future of the resource, therefore, was left to take care of itself. At this time, the importance of wildlife was not generally recognized except for its food and market value. It is not surprising, therefore, that anxiety was aroused among sportsmen and others as to the future of the resource.

The anxiety of the sportsmen prompted the appointment of a Commission in 1890 to investigate conditions and submit recommendations. The Commission tackled the job by implementing a detailed investigation. It prepared questionnaires on every phase of game and fish and sent them to sportsmen and other interested persons throughout the Province. In addition, the Commission travelled the country obtaining the personal views of hundreds of active sportsmen who appeared before it to give evidence relating to wildlife based on their own knowledge, experience and observations. The report of the Commission was a sweeping, outspoken indictment of prevailing conditions. It contained a long list of recommendations intended to prevent abuse, protect the resource and generally to establish more effective administration and enforcement.

In 1892, immediately after the report of the Commission had been presented, an Act to change the laws was passed. The Act, entitled The Ontario Game Protective Act, embodied a great many of the Commission's recommendations. The open season for deer was reduced to a fifteen-day period from November 1st to November 15th. The bag limit for deer was reduced to two, and the taking of fawns was prohibited. A uniform season for upland game birds and migratory birds was established from September 1st to December 15th. Another important change prohibited the purchase and sale of quail, snipe, wild turkey, woodcock and partridge.

Prior to 1892, non-residents of the Province could obtain a licence to hunt deer for $10.00. At this time, however, the fee was increased to $25.00 as a means of supporting a permanent force of Provincial Game and Fish Wardens recommended by the Commission.

The same legislation provided that any non-resident hunting within the Province "shall on request by any person whomsoever within the Province, at all times, and as often as requested, produce and show the person making the request, such licence; and if he shall fail or refuse to do so he shall forfeit any such licence he may possess -- and be deemed to have violated the provisions of this Act". This section had the effect of subjecting the non-resident to the scrutiny of any person within the Province. This was not conducive to goodwill however effective it might have been as an enforcement measure.

The Ontario Game Protection Act, 1892, also provided for the establishment of a Board of Fish and Game Commissioners. The Board consisted of five members, in Council for a term of three years, all of whom, except the Secretary who could be a member of the Board, served without compensation other than payment for actual disbursements. The duties of the Board were set out as follows:

"It will be the duty of the Board to give all necessary direction and to take all responsible measures for securing the enforcement of the laws for the protection of game and for giving effect to the provisions of laws for the preservation, propagation and

NOTICE

RESPECTING

DUCK SHOOTING

AT RONDEAU.

The following Regulations have been adopted by Order in-Council dated 6th October 1896 respecting the shooting and taking of Wild Ducks and other water-fowl in the waters adjoining Rondeau Provincial Park, and in Rondeau Harbour and all sportsmen and others are required to take notice of the same and to govern themselves accordingly:

REGULATIONS respecting the shooting and taking of Wild Ducks, and other water-fowl in the waters adjoining Rondeau Provincial Park, and in Rondeau Harbour, under section 4, Chapter 68 59 Victoria.

No steam-yacht, sailing craft or vessel of any kind (except rowboats or canoes) shall be used to aid or assist in the shooting or taking of Wild Ducks or other water-fowl in the waters adjoining Rondeau Provincial Park or in Rondeau Harbour, whether by towing rowboats or small craft, causing the ducks or other water-fowl to rise, or in any other manner whatsoever.

No boats, nor any of the devices known as skegs, monitors, or other similar devices, used in the shooting or taking of Wild Ducks or other water-fowl in the said waters or Harbour, shall be stationed or anchored at a greater distance than one hundred yards from the shore or outer line of rushes; and to prevent disputes, the Ranger of the said Rondeau Provincial Park shall have power to define the said shore or outer line of rushes, and also to decide as to the same in individual cases.

No person shall shoot or take more than 150 Wild Ducks or other water-fowl in said waters or Harbour during any one year.

THE PENALTY FOR VIOLATING ANY OF THE FOREGOING REGULATIONS SHALL BE A FINE NOT EXCEEDING **$50!** AND NOT LESS THAN **$20!**

together With Costs of Prosecution to be Recoverable in the Same Manner as Under Section 21 of the Ontario Game Protection Act.

A. S. HARDY,

ATTORNEY-GENERAL.

Toronto, 6th October, 1896.

A Cloth Poster, 1896.

protection of the fish of the Province; to collect, classify and preserve all such statistics, data and information as they may think will tend to promote the objects of such laws; to conduct all the necessary correspondence; to take charge and keep all reports, books, papers, documents or specimens which they may collect in the discharge of their duties under this Act; and to prepare an annual report to the Lieutenant-Governor on or before the 31st day of December of each year, showing what has been done by them during the year and the manner in which their duties have been performed, with such recommendations for the Legislative action, if any, as the said Board may deem calculated to better promote the preservation of fish and game; increase the more useful food fishes within the Province and lessen the cost of the same."

The Act further provided that the Lieutenant-Governor in Council, upon recommendation of the Board, might appoint one Chief Game and Fish Warden and four other game and fish wardens, whose duties would be prescribed by rules and regulations. The compensation of the Secretary of the Board, the Chief Warden and other wardens was to be fixed by the Lieutenant-Governor in Council and paid out of licence fees and fines collected. Provisions were made for the appointment and dismissal of deputy wardens by the Chief Game Warden at the discretion of the Board.

The new era of game and fish management, under the Board of Commissioners, lasted until 1906. The Board was active particularly in the matter of enforcement and in the development and organization of a protective service. It appears to have devoted a great deal of its time and energies to deer management and to the problem of the more or less unrestricted slaughter which prevailed.

The principles of conservation as we know them today were in the embryonic stage and were not born until many years later.

The Department of Game and Fisheries was formed in 1907. Instead of operating under a Board of Commissioners, the new department was placed under the control of a Cabinet Minister. Under the Minister, the Department consisted of a Superintendent of Game and Fisheries, an Inspector, an Acting Inspector and seven game and fisheries wardens. The Superintendent, Inspector and Acting Inspector were located in Toronto, while the wardens were located throughout the Province at Simcoe, Windsor, Belleville, Beaumaris, North Bay, Sault Ste. Marie and Kenora.

This newly formed staff received an annual salary and were employed on a full-time basis. The wardens were assisted by a number of overseers or deputy wardens—215 at the time the Department was formed. Overseers or deputy wardens at that time received no regular pay but were compensated for their efforts by receiving one-half of the fine when a penalty was imposed. Under certain conditions, they were reimbursed for out-of-pocket expenditures.

During the next thirty-nine years, the Department was expanded. By 1946, when it amalgamated with the Department of Lands and Forests, there were 136 full-time game and fisheries enforcement officers. Throughout this period, the Department followed a policy of game protection. This policy, effectively enforced by

A hunter with 16 deer at Wahwaskkesh Lake, Parry Sound District, 1914.

an efficient staff of game wardens, gave rise to the thought that game and fish resources were being over-protected.

In 1925, the Department engaged its first biologist, a Mr. H.H. MacKay, who was assigned to fisheries work. Two other biologists employed in 1928 remained in service for only a short period. In 1930, Mr. W.H.R. Werner joined the Department as assistant biologist. During the next 16 years, the staff biologists were assisted during the summer months by a number of university students.

The fourth and present era of game and fish management began in 1946 when the Department of Game and Fisheries became the Fish and Wildlife Division under the Department of Lands and Forests.

The amalgamation of the two Departments was conceived as a move to bring all the renewable natural resources of the Province under one administration. The process of transfer began in May, 1946, and was completed by July of the same year. The new Division, headed by a Chief, was organized into four separate sections, namely: enforcement, wildlife, game fish and commercial fish. In the field, all game and fisheries overseers and inspectors (later known as Conservation Officers) were supervised by Fish and Wildlife Specialists who came under the various District Foresters. The Fish and Wildlife Division headed by Dr. W.J.K. Harkness, the Chief of the new Division until his death in 1960, became one of the most outstanding wildlife management units on the North American Continent. The number of biologists had increased from two to more than fifty. Enforcement officers increased from 136 to more than 200.

Under the new administration, it was also recognized that enforcement needed to be supplemented by co-operation from an informed public. To achieve this, a programme of education and information was developed.

The most gratifying feature of fish and wildlife management today is the spirit of co-operation which exists between sportsmen and administration.

Individually and collectively, those interested in fish and wildlife are behind the cause of conservation and have come to realize there is more to hunting and fishing than just harvesting the game.

Dr. C.H.D. Clarke, Chief of the Fish and Wildlife Branch since 1960, has continued to develop the principles of restoration and wise utilization of the natural resources.

At the present time, the element of food less often enters into the picture as far as the sportsmen is concerned, and recreational pleasures are being stressed rather than the bag. Such an ideal emphasizes the thrill, not the kill; the opportunities for health and happiness, rather than big catches; and in so doing, places a large measure of responsibility upon the sportsman for the welfare of his sport. As someone has said, "The most effective game laws are not written in the Statute Books, but in the conscience of the sportsman".

A skilled poacher of the Mississagi River area who became a spokesman for conservation: Archie Belaney (??--1938), better known as Grey Owl, his Ojibway name after adoption by the tribe. Shown here with Ancharo, one of his wives, the reformed Grey Owl was Deputy Chief Ranger with Department of Lands and Forests. He published fascinating animal stories and was received at Buckingham Palace.

ONTARIO FISH AND WILDLIFE HEADLINES

1762 - Military Governor, General Thomas Gage, establishes a close season on "partridges" (ruffed grouse) in Canada - March 15-July 15.
1793 - First wolf and bear bounty.
1796 - Bear bounty rescinded.
1798-9- Bill to protect salmon in streams of York Township fails to pass in two successive sessions.
1807 - Act for the Preservation of Salmon passed.
1807 - Wolf bounty rescinded.
1809 - Wolf bounty re-instituted.
1821 - Close season established on deer—January 10-July 1.
1839 - First general game law for Upper Canada.
1850 - Elk (wapiti) near extinction.
1850 - John McCuaig, first Superintendent of Fisheries for Upper Canada, with one assistant.
1856 - Game laws rewritten to include fur animals.
1859 - Fisheries Act (Province of Canada) passed; provides for leases of commerial fishing locations.
1860 - Discharge of sawmill waste prohibited.
1864 - Insectivorous and other birds protected.
18,5 - Discharge of lime, chemicals, drugs, poisonous matter, dead fish or deleterious substances prohibited into waters frequented by fish. Amendment in 1868 provided for exemptions "in the public interest."
1865 - Samuel Wilmot began experiments in artificial progagation of Atlantic salmon at Newcastle.
1867 - Confederation. Game not mentioned in B.N.A. Act and becomes a matter of provincial jurisdiction as being of "local" interest. Fisheries assigned to Dominion authority.
1868 - Dominion government salmon hatchery at Newcastle under Samuel Wilmot

becomes first government fish hatchery in western hemisphere.

1868 - Game Law of Upper Canada amended and becomes provincial statute.

1868 - Post-Confederation Fisheries Act of Canada assimilates provincial laws and creates Dominion Department of Fisheries.

1873 - Game Law amendment closes spring shooting of ducks.

1873 - Insectivorous Bird Act first amended by provincial legislation.

1876 - Samuel Wilmot, Dominion Superintendent of Fish Hatcheries.

1880 - Introduction of carp into Ontario.

1884 - Last puma (panther or cougar) killed in Ontario.

1884 - Last big flock of passenger pigeons.

1885 - Ontario Fisheries Act set up a Provincial Fisheries Administration under the Department of Crown Lands. Provision was made for fisheries officers, licences, close seasons and limits. The Dominion Department of Fisheries had operated only on the Great Lakes and done nothing about "inland" waters or angling.

1887 - Game Law amendment provides for fees and officers.

1887 - White-tailed deer enter Ontario from Michigan at Sault.

1887 - Commissioner of Crown Lands issues fishery regulations including $1. non-resident angling licence (20 sold in Kawartha area, 375 at Nipigon); speckled trout season—May 1-Sept. 15; 3 officers appointed.

1888 - Game Regulations provided for $10. licence for non-residents to hunt deer. Revenue of $220. First close season (until 1895), on moose and caribou.

1889 - First deer reported in Rainy River district.

1890 - Ring-necked pheasants released in Ontario.

1890 - Royal Commission on Fish and Game appointed under chairmanship of Dr. G.A. MacCallum.

1892 - "Tourist or summer visitor" defined as anyone more than five miles from home.

1892 - Alewife becomes abundant in Lake Ontario.

1892 - Fish and Game Commission Report. Fish and Game Administration consolidated under a new Board under Dr. MacCallum, Chairman: A.D. Stewart, Chief Game Warden.
First salaried full-time Game Wardens ($10. a month): J.H. Willimott, Beaumaris; H.K. Smith, Belleville; John A. Gill, Dunnville; F.C. Quallins, Leamington. 392 Deputy Game Wardens appointed.

1892 - Quebec and Ontario challenge Dominion jurisdiction in fisheries.

1893 - First steam-powered fishing tug (Lake Huron).

1894 - Ontario Fisheries Regulations extended to cover previous area of Dominion authority.

1895 - Edwin Tinsley becomes Chief Game Warden.

1896 - First resident deer licence ($2.).

1897 - Last record of Lake Ontario Atlantic salmon.

1898 - Privy Council decision on fisheries gives provinces property in beds of all rivers and lakes, and sole right to issue leases, licences and permits, and legislate concerning these and all other matters of property and civil rights in Fisheries, and to impose licences to raise revenue; matters of law and

regulation of the fishery remain with the Dominion.

1898 - Special session of Legislature amends Ontario Fisheries Act to conform to the Privy Council decision. An Ontario Fisheries Commission set up (Chairman F.R. Latchford) and Fisheries and Game separated. All Dominion licences and records transferred. Five District Supervisors become first full-time Fisheries Officers.

1899 - Fish Commissioner, Dept. of Fisheries, Ottawa, and Deputy Commissioner of Fisheries for Ontario, S.T. Bastedo, in separate reports, draw attention to growing importance of pollution.

1901 - Federal Fisheries Research Station established at Go-Home Bay (submitted annual reports to the province 1903-1913).

1902 - Last observation of passenger pigeon in Ontario.

1902 - First fur farm in Ontario.

1902 - Montague A.A. Smith becomes Chairman, Game Commission.

1903 - Sale of game fish prohibited.

1904 - Minister of Public Works becomes commissioner of Fisheries; S.T. Bastedo, still Deputy Commissioner.

1904 - Non-resident angling permit covers export of two-day limit of fish.

1904 - Last wild turkey in Ontario.

1905 - Salaried District Fisheries Supervisors dispensed with; part-time officers increased to 156.

1905 - Resident hunting licence recommened.

1906 - H.S. Osler becomes Chairman, Game Commission.

1907 - Game and Fisheries Commissions united to form new Department of Game and Fisheries: Hon. J.O. Reaume, Minister; E. Tinsley, Superintendent of Game and Fisheries; and field staff of inspectors and wardens.

1908 - Jack Miner succeeds in attracting Canada geese.

1909 - First release of Hungarian partridge.

1909 - First provincial hatchery at Mount Pleasant.

1909 - Kelly Evans Commission on game fish, fisheries and game.

1910 - First open season on pheasants.

1912 - European hares escape from Bow Park Farm, Brantford.

1912 - First open season on Hungarian partridge.

1913 - Dominion Government terminates culture of game fish in Ontario.

1914 - A. Sherriff, Deputy Minister, Game and Fisheries.

1914 - Dealers in raw furs licensed.

1916 - Trapper's licence instituted ($5.)

1916 - First royalties on raw fur pelts.

1916 - Migratory Birds Treaty.

1916 - D. McDonald becomes Deputy Minister of Game and Fisheries.

1917 - Ontario establishes first Crown Game Preserves.

1917 - Departmental fish sales organization set up.

1917 - $2400. worth of furs and 650 deer weighing 66,215 pounds harvested by rangers in Algonquin Park.

1918 - Smelt introduced to Lake Michigan.

1918 - Resident fur buyer's licence instituted.

1919 - Fur dresser's and tanner's licence instituted.
1920 - Department of Game and Fisheries enlarged; 60 full-time overseers under 7 District Superintendents.
1921 - Sea lamprey first recorded above Niagara Falls.
1922 - Pheasant stocking by government started.
1925 - H.H. MacKay becomes provincial biologist; directs surveys of waters and six provincial fish hatcheries.
1926 - Ontario takes over remaining Dominion Government fish hatcheries.
1926 - Experimental fur farm set up at Kirkfield, Ontario.
1926 - Fish Culture Branch institutes pollution studies.
1927 - First government releases of Hungarian partridge.
1928 - Biological and Fish Culture Branch under H.H. MacKay.
1928 - Special Committee on Game Fish under Minister; W.J.K. Harkness, Secretary, (reported in 1930).
1929 - Close season on caribou.
1930 - Game Wardens put in uniform.
1930 - First resident hunting licence ($1.).
1931 - Special Committee on Game (reported in 1933).
1932 - Elk (wapiti) re-introduced.
1933 - Tremendous flight of northern sharp-tailed grouse into the Clay Belt.
1934 - D.J. Taylor, Deputy Minister, Game and Fisheries.
1934 - First Pelee Island pheasant shoot, with first township fee.
1935 - First zoned traplines.
1936 - Eagles and ospreys protected.
1942 - Bear bounty re-instituted.
1946 - Great Lakes Fisheries Treaty signed but never ratified.
1946 - Department of Game and Fisheries abolished; becomes Fish and Wildlife Division of Department of Lands and Forests: Chief, W.J.K. Harkness.
1946 - Conservation officers first trained at Dorest Ranger School.
1947 - All traplines on Crown lands zoned.
1952 - Ontario Pollution Control Board formed (interdepartmental).
1955 - New Great Lakes Fishery Convention signed and ratified; Great Lakes Fishery Commission established.
1957 - Pollution control transferred to Ontario Water Resources Commission.
1957 - Hunter Safety Training Program instituted.
1960 - C.H.D. Clarke becomes Chief, Fish and Wildlife Branch.
1960 - Hunter Safety training for new hunters; last year without compulsion; 154 accidents of which 36 fatal.
1961 - Bear bounty removed; bear becomes game animal.
1962 - First public fishing area opened at former Mount Pleasant Fish Hatchery.
1967 - One hundred years of Confederation, 205 years of game laws, 160 years of fisheries laws, 102 years of fish hatcheries, 66 years of fisheries research, 60 years of organized fisheries and wildlife administration, 23 years of wildlife research, 21 years of amalgamation with Department of Lands and Forests.

Elk on Nipissing Crown Game Preserve, 1940. Once native to Ontario, elk were re-introduced from Alberta, beginning in 1932. The western elk transmitted diseases to deer and domestic livestock, and the elk program was abandoned. Below: a good catch at Eugenia, Grey County, 1902.

ONTARIO

PROVINCE OF OPPORTUNITY